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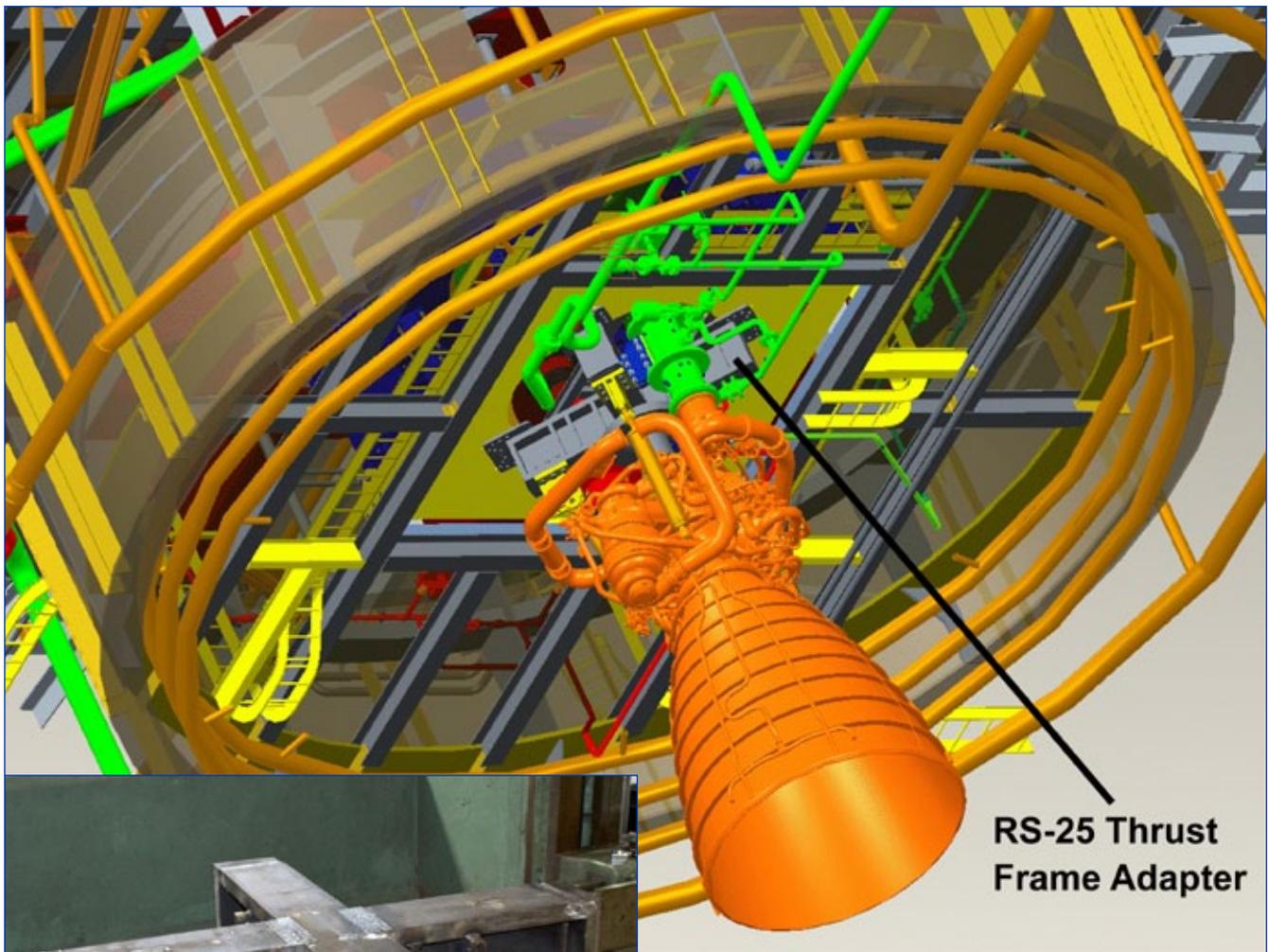
John C. Stennis Space Center

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Production of key equipment paves way for NASA SLS RS-25 testing



RS-25 Thrust Frame Adapter

This design image shows a RS-25 rocket engine installed on the A-1 Test Stand at NASA's Stennis Space Center. A line indicates the grey, cross-like thrust frame adapter (actual adapter shown left), which is being fabricated for the stand as NASA prepares to test RS-25 engines for the agency's new Space Launch System vehicle. The adapter is attached to the thrust measurement system on the stand, and the RS-25 engine is attached to the adapter. The adapter holds the engine in place and absorbs the thrust produced during a test, while allowing accurate measurement of the engine performance. [See article on Page 3.](#)

“Diversity and inclusion is not something we should only discuss or just think about; it’s something we must put into action.”



From the desk of
Jo Ann Larson

Manager, Office of Diversity and Equal Opportunity, Stennis Space Center

Greetings from the Office of Diversity and Equal Opportunity (ODEO). We have quickly found ourselves at the mid-year mark of 2013. It has been an eventful and successful year so far for all of us!

Every day, in all that we do, Stennis strives to promote organizational culture that values the whole individual; respects the diversity of viewpoints, experience, talents and ideas; and fosters inclusion. During my eight-year tenure at Stennis, I have seen how far we have come as a center in embracing equal opportunity and diversity and inclusion (D&I) as an integral part of Stennis’ culture and mission.

Our progress in the area of D&I is exemplified by Stennis, once again, being recognized as a leader in building the foundation for diversity and inclusion. For the second straight year, Stennis has ranked first in the entire federal government for employee empowerment, fairness and support for diversity. We all should be proud that our employees believe the actions and policies of leadership and management promote and respect diversity and inclusion.

D&I is not something we should only discuss or just think about; it’s something we must put into action. ODEO promised to keep you updated on our recent progress. I’m excited to soon share with you the Stennis Diversity and Inclusion Strategic Plan. Back in December, we kicked into high gear with the formation of the D&I Working Group. Rather than have ODEO and the Office of Human Capital create the plan and have employees just react to it, center leadership took ownership of the process. Jim Bevis chairs the working group. Other members are Randy Galloway, Rob Harris, Nathan Sovik, Marina Benigno, Dorsie Jones and me. The NASA Headquarters diversity manager

and Curtis Lewis & Associates facilitated by looking at Stennis’ D&I survey data, focus groups input and developing strategies to address six overarching principles:

- Demonstrated leadership commitment.
- Employee engagement and effective communication.
- Continuous education, awareness and skills development.
- Demonstrated commitment to community partnerships.
- Shared accountability and responsibility for D&I.
- Effective measurement of D&I efforts.

Over the next few years, this plan will serve as a living roadmap for the center as we build and sustain a diverse and inclusive organization. We are optimistic about the future and the exciting road ahead.

What’s next? We are finalizing membership for the center D&I board. I’m also excited to announce James “Jake” Jacobs will be joining ODEO as Stennis’ diversity program manager! We have plans for developing a D&I communication plan, benchmarking best practices and engaging the workforce by establishing employee resource groups and diversity dialogue sessions.

I welcome your insights as we continue to build an equitable and inclusive work environment and fully leverage our diversity over the next few years. As always, be safe – and enjoy your summer with friends and family!

Jo Ann

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FULFILLING NASA'S EXPLORATION MISSION

NASA prepares for RS-25 testing

NASA plans to begin testing RS-25 engines for its new Space Launch System (SLS) in the fall of 2014, and the agency's Stennis Space Center in Mississippi has a very big – literally – item to complete on the preparation checklist.

Fabrication recently began at Stennis on a new 7,755-pound thrust frame adapter for the A-1 Test Stand to enable testing of the engines that will provide core-stage power for NASA's SLS. The stand component is scheduled to be completed and installed by November 2013.

"We initially thought we would have to go offsite to have the equipment built," said Gary Benton, RS-25 test project manager at Stennis. "However, the Stennis design team figured out a way to build it here with resulting cost and schedule savings. It's a big project and a critical one to ensure we obtain accurate data during engine testing."

Each rocket engine type requires a thrust frame adapter unique to its specifications. On the test stand, the adapter is attached to the thrust measurement system. A rocket engine then is attached to the adapter, which must hold the engine in place and absorb the thrust produced during a test, while allowing accurate measurement of the engine performance.

The J-2X equipment installed on the A-1 Test Stand now cannot be used to test RS-25 engines since it does not match the engine specifications and thrust requirements. For instance, the J-2X engine is capable of producing 294,000 pounds of thrust. The RS-25 engine will produce approximately 530,000 pounds of thrust.

NASA and the Lockheed Martin Test Operations Contract Group team worked together in designing the new adapter to make sure such requirements were met. They also communicated closely with the Jacobs Technology welding and machine shop teams to make sure what was being designed actually could be built.

The design had to account for a number of consider-

ations, such as specific stresses on the equipment as an engine is fired and then gimballed (rotated) during a test; what type and strength of bolts are needed to fully secure the equipment; and what materials can be used to build the adapter.

"This is a very specific process," Benton said. "It is critical that thrust data not be skewed or compromised during a test, so the adapter has to be precisely designed and constructed."

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– Gary Benton

The fabrication process itself involves handling and shaping large segments of certain material, which required welders to receive specialized training. In addition, shop personnel had to create a welding procedure for dealing with the chosen construction material. For instance, the area of material being welded must maintain a heat of 300 degrees in order to ensure

welds bond properly. That procedure and other specifications are being incorporated into Stennis standards.

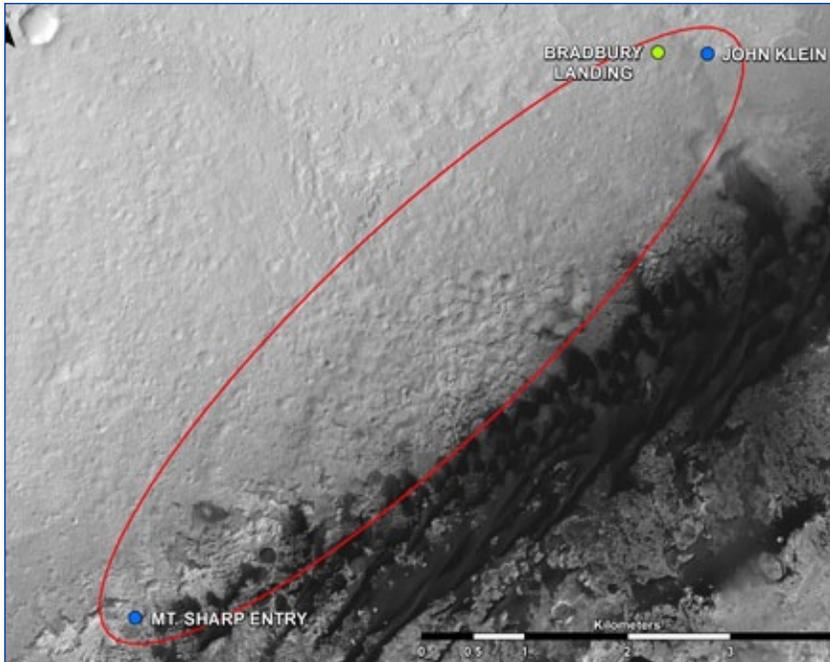
"It's a challenging project," said Kent Morris, RS-25 project manager for Jacobs Technology. "It's similar to the J-2X adapter project, but larger. It will take considerable man hours to perform the welding and machining needed on the material. The material used for the engine mounting block alone is 32 inches in diameter and 20 inches thick."

Physically, the adapter is the largest facility item on the preparation checklist for RS-25 testing, but it is far from the only one, Benton said. Additional modifications will be made to the test stand configuration and equipment once J-2X gimbal testing is complete this summer.

Once testing begins, engineers and test team personnel at Stennis will draw on a wealth of engine testing experience. The RS-25 engines, previously known as the space shuttle main engines were tested at Stennis for more than three decades.

The SLS Program is managed at NASA's Marshall Space Flight Center in Huntsville, Ala. For information about NASA's SLS Program, visit: www.nasa.gov/sls.

FULFILLING NASA'S EXPLORATION MISSION



This map shows where NASA's Mars rover Curiosity landed in August 2012 at "Bradbury Landing;" the area where the rover worked from November 2012 through May 2013 at and near the "John Klein" target rock in the "Glenelg" area; and the mission's next major destination, the entry point to the base of Mount Sharp. The precise route has not been determined, but the rover's path will likely be in the area outlined in red. Credit: NASA/JPL-Caltech/Univ. of Arizona

NASA's Curiosity Mars rover nears turning point

NASA's Mars Science Laboratory mission is approaching its biggest turning point since landing its rover, Curiosity, inside Mars' Gale Crater last summer. Curiosity is finishing investigations in an area smaller than a football field where it has been working for six months, and it will soon shift to a distance-driving mode headed for an area about five miles away, at the base of Mount Sharp.

No more rock drilling or soil scooping is planned in the "Glenelg" area that Curiosity entered last fall after landing. To reach Glenelg, the rover drove east about a third of a mile from the landing site. To reach Mount Sharp, Curiosity will drive for many months. "This truly is a mission of exploration, so just because our end goal is Mount Sharp doesn't mean we're not going to investigate interesting features along the way," said Jim Erickson, Mars Science Laboratory project manager at NASA's Jet Propulsion Laboratory in Pasadena, Calif.

While completing major first-time activities since landing, the mission has also already accomplished its main science objective. Analysis of rock powder from the first drilled rock target, "John Klein," provided evidence that an ancient environment in Gale Crater had favorable conditions for microbial life: the essential elemental ingredients, energy and ponded water that was neither too acidic nor too briny.

For more, visit: www.nasa.gov/msl and <http://mars.jpl.nasa.gov/msl>.

NASA in the News

Public invited to 'go to Mars'

NASA is inviting members of the public to submit their names and a personal message online for a DVD to be carried aboard a spacecraft that will study the Martian upper atmosphere. The DVD will be in NASA's Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft, scheduled for launch in November. The DVD is part of the mission's Going to Mars Campaign. The DVD will carry every name submitted. The public also is invited to submit a three-line poem, or haiku. Three haikus will be selected. The deadline for submissions is July 1. An online public vote to determine the top three messages for the DVD will begin July 15. Participants who submit names to the Going to Mars campaign will be able to print certificates of appreciation to document their involvement. To participate, visit: <http://tinyurl.com/lknqxp>. For more information on MAVEN, visit: www.nasa.gov/maven.

Moon gravity mystery solved

NASA's Gravity Recovery and Interior Laboratory (GRAIL) mission has uncovered the origin of massive invisible regions that make the moon's gravity uneven, a phenomenon that affects the operations of lunar-orbiting spacecraft. Because of GRAIL's findings, spacecraft on missions to celestial bodies can navigate with greater precision in the future. GRAIL spacecraft identified large, dense regions called mass concentrations, or mascons, characterized by strong gravitational pull. Data confirm the mascons were generated when large asteroids or comets impacted the ancient moon. The findings are published in the May 30 edition of the journal *Science*. For more about GRAIL, visit: www.nasa.gov/grail.

For the latest NASA news, visit online: www.nasa.gov/news/releases/latest/index.html.

Photographs provide glimpses of Stennis' past

Note: For more than 50 years, NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. This month's Lagniappe highlights a chapter in the history of the south Mississippi rocket engine test center.

In turning back the history pages to the then-Mississippi Test Operations, there are many “firsts” at Stennis Space Center that have been widely publicized. However, there are others that have not had an opportunity until now. Below are photos of the first office buildings and NASA vehicles at Stennis. Most of the photos were taken during the mid-1960s.

First NASA Office Buildings



The Rouchon House served as the first NASA Headquarters onsite. Located in the former town of Gainesville, it was the summer home of Dr. Maurice Rouchon. In 1965, NASA Headquarters moved to Building 1100, now the Roy S. Estess Building, and the Rouchon House was renovated in 1998 as a place to hold conferences.



The Information Center, formerly Shorty's “43 Club,” housed the headquarters for the first Public Affairs Office, including a conference room and photo lab. The former restaurant and lounge, located on Highway 43 three miles north of Gainesville, closed in 1962. The owners were Mr. and Mrs. Elwood Andrews.

First NASA Vehicles



(Above left photo) NASA's first patrol car, was a four-door Chevrolet Biscayne.

(Above right photo) NASA's first fire truck was an International Loadstar 1700.

(Right photo) NASA's first multi-passenger station wagon was a nine-door Checker Aerobus, used to transport personnel and visitors. The driver was Larry Breland.



Office of Diversity and Equal Opportunity

Diversity and inclusion efforts remain focus at Stennis

“You can change only what people know, not what they do.”

Scott Adams – A Thought Experiment

This month, we touch on the importance of the mindset of our senior management and how it sculpts the future of Stennis Space Center. We all understand that, for the most part, change comes from the top down. Stennis workforce statistics over the past four years reflect the accomplishment by management in providing the highest level of expertise in the workforce. It also reflects choices that have created a more diverse and competitive workforce.

During this time, the Stennis workforce has increased in every underrepresented category. While we have not met the civilian labor force percentages across the board, we have made major progress. There is room for improvement in a few underrepresented populations, but with the continued efforts of our management, we will accomplish this in the future. Any identified areas of concern will be addressed in the new Management Directive 715 (MD 715) Three-Year Plan.

The MD 715 is a center management tool that gives a snapshot of where we are in relation to workforce demographics. It is a living document that changes as we change. It shows our accomplishments and also is a tool to gauge the status of our workforce in comparison to the nation as a whole. It reveals any barriers in meeting the civilian labor force percentages outlined in the U.S. census. If barriers are identified, opportunities are sought to make necessary changes to enhance the workforce. Once goals for improvement are set, actions are monitored to determine if expectations are fulfilled.

With the Stennis Diversity and Inclusion Implementation Plan receiving its finishing touches, this will be one more tool Stennis will use to increase awareness. Senior management is fully supportive and actively involved in the planning and implementation of diversity and inclusion efforts at Stennis.

We, as a center, will continue to focus on those things that will enhance our ability to be the finest workforce in all of NASA.

Stennis hosts 2013 Old Timers’ Day

Former Stennis Space Center employees enjoyed a return to the test facility for Old Timers’ Day activities May 17. The annual fellowship was attended by retirees, guests and employees. The Stennis Recreational Association, Jacobs Technology, Pratt & Whitney Rocketdyne, Keesler Federal Credit Union, Seal’s Marketplace and the Walmart store in Waveland donated food and drinks. Door prizes also were donated. Participants offered positive response about the event. NASA retiree Mary Gene Dick said, “It still feels like home when I come through those gates.”



Hail & Farewell

NASA bids farewell to the following:

Trish Penton	AST, Engineer Project Management Center Operations Directorate	Querita Poole	Management Support Assistant Safety & Mission Assurance Directorate
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And welcomes the following:

Katrina Emery	Education Officer Office of Education	Robert Dieu	Student Trainee Engineering & Test Directorate
Daniel Jones	AST, Materials & Structures Engineering & Test Directorate	Angelica Baker	Student Trainee Engineering & Test Directorate
Jonathan Sill	Student Trainee Safety & Mission Assurance Directorate	David Balajthy	Student Trainee Office of the Chief Counsel

INFINITY hosts Astro Camp participants

About 350 Mississippi and out-of-state youths have begun to visit INFINITY Science Center for weeklong Astro Camp and Astro STARS (Spaceflight, Technology, Astronomy & Robotics @ Stennis) activities sponsored by Stennis Space Center. Astro Camp sessions run until the middle of July for children ages 7-12. An Astro STARS Camp later this month will provide activities for youths ages 13-15. This year, the Astro Camp focus is "Beyond Earth: Expanding Human Presence into the Solar System." Students will explore how NASA will bring a human presence to destinations such as the moon, near-Earth asteroids and even Mars. During the Astro STARS Camp, participants will engage in hands-on experiences in a variety of subjects, including web design, digital imaging and multi-stage model rocketry. Camp participants also will visit with Stennis professionals to learn about the wide range of STEM (science, technology, engineering and math) career fields. Accompanying photos show Astro Camp students during a June 3-7 session engaged in various activities, including the launch of model rockets.

